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Filed : June 18, 2001

REMARKS

The foregoing amendments and the following remarks are responsive to the August 19, 2005 Final Office Action. Claims 1-17 remain as originally filed, Claims 18-25 were previously cancelled without prejudice, and new Claims 26-30 are added. Thus, Claims 1-17 and 26-30 are presented for further consideration.

Response to Objection to the Drawings

In the August 19, 2005 Final Office Action, the Examiner objects to the informal drawings filed on July 12, 2002. Applicant has submitted herewith formal drawings as replacement sheets which are labeled "Replacement Sheet Reply to Final Office Action of August 19, 2005." Applicant submits that these formal drawings do not add new matter to the present application. Applicant respectfully requests that the Examiner withdraw the objection to the drawings.

Response to Rejection of Claims 1-17 Under 35 U.S.C. § 102(b)

In the August 19, 2005 Final Office Action, the Examiner rejects Claims 1-17 as being anticipated by the May 1998 publication "Associated Particle Imaging (API)," from Bechtel Nevada ("the Bechtel reference").

Claim 1

Claim 1 recites (emphasis added):

1. A system for non-invasive stoichiometric detection and imaging of chemical elements and compounds in a material to be analyzed, the system comprising:

a particle generator, the particle generator generating a plurality of first subatomic particles and a plurality of second subatomic particles at **a target position which is a first distance from the material to be analyzed;**

at least one photon detector, the at least one photon detector being capable of detecting photons resulting from irradiation of the material to be analyzed by the first subatomic particles and generating a plurality of first electrical signals;

a particle detector array comprising a plurality of particle detectors, **the detector array at a second distance from the target position, the second distance being larger than the first distance,** the particle detectors each being capable of detecting at least one second subatomic particle from the particle generator, and generating a plurality of second electrical signals; and

an analyzer operatively connected to the particle detector array and the at least one photon detector, comprising:

a processor, the processor filtering the plurality of first electrical signals so as to produce a plurality of filtered electrical signals; and

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a plurality of electronic coincidence circuits, the coincidence circuits detecting coincidences occurring between the plurality of filtered electrical signals and the plurality of second electrical signals.

The Examiner states that the Bechtel reference discloses all the limitations of Claim 1. In particular, at the bottom of page 3 of the August 19, 2005 Final Office Action, the Examiner states that the Bechtel reference discloses that:

the detector array [is] at a second distance from the target position (see, for example, Figure 1 on page 2 wherein the position-sensitive PMT is clearly further away from the material to be analyzed than the tritiated target, etc), the second distance being larger than the first distance.

Applicant submits that this rejection is based on a misinterpretation of the claims, particularly the definition of the “second distance.” As shown in this quoted language, the Examiner has misinterpreted the distance between the detector array and the material to be analyzed as being the second distance. However, as recited by Claim 1, the target position is a first distance from the material being analyzed and the particle detector array is a second distance from the target position. Claim 1 further recites that the second distance is **larger** than the first distance (*see, e.g.*, Figure 18 of the present application). At page 23, line 26 - page 25, line 22, the present application describes how the second distance (between the target position and the particle detector array) being **larger** than the first distance (between the target position and the material being analyzed) advantageously provides a magnification effect. The correct definition of the second distance is also explained in the “Declaration of Bogdan C. Maglich, Ph.D. Pursuant to 37 C.F.R. § 1.132” submitted herewith.

Applicant submits that the Bechtel reference does not disclose such a system as recited by Claim 1 of the present application. For example, Figures 1 and 8 of the Bechtel reference disclose a system in which the second distance (between the target position and the particle detector array) is **smaller** than the first distance (between the target position and the material being analyzed). Thus, the Bechtel reference does not disclose the relative distances as described by Claim 1 of the present application.

For at least the foregoing reasons, Applicant submits that Claim 1 includes limitations which are not disclosed by the Bechtel reference, so Claim 1 is not anticipated by the Bechtel reference. Applicant respectfully requests that the Examiner withdraw the rejection of Claim 1 and to pass Claim 1 to allowance.

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Claims 2-4

Each of Claims 2-4 depends from Claim 1, so each of Claims 2-4 includes all the limitations of Claim 1, as well as additional limitations of particular utility. Thus, Claims 2-4 are patentably distinguished over the Bechtel reference. Applicant respectfully requests that the Examiner to withdraw the rejection of Claims 2-4 and to pass Claims 2-4 to allowance.

Claim 5

Claim 5 recites (emphasis added):

5. A system for detecting and imaging a chemical substance, comprising:

a particle source, the source generating a plurality of first subatomic particles and a plurality of second subatomic particles from a **target position a first distance from the chemical substance**, the first subatomic particles irradiating the chemical substance;

at least one photon detector capable of detecting photons resulting from the irradiation of the chemical substance by the first subatomic particles;

a particle detector array comprising a plurality of particle detectors, the particle detector array capable of detecting at least one second subatomic particle, **the particle detector array at a second distance from the target position, the second distance larger than the first distance**; and

an analyzer capable of detecting and imaging the chemical substance based on signals output from the at least one photon detector and the at least one particle detector.

As discussed above in relation to Claim 1, Applicant submits that the Bechtel reference does not disclose all the limitations of Claim 5. For example, the Bechtel reference does not disclose a second distance (between the target position and the particle detector array) which is larger than the first distance (between the target position and the chemical substance), as recited by Claim 5. Therefore, Applicant submits that Claim 5 is patentably distinguished over the Bechtel reference. Applicant respectfully requests the Examiner to withdraw the rejection of Claim 5 and to pass Claim 5 to allowance.

Claims 6-17

Each of Claims 6, 7, 10, and 12-14 depends from Claim 5, each of Claims 8 and 9 depends from Claim 7, Claim 11 depends from Claim 10, each of Claims 15 and 16 depends from Claim 14, and Claim 17 depends from Claim 16. Therefore, each of Claims 6-17 includes all the limitations of Claim 5, as well as additional limitations of particular utility. Thus, Claims

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6-17 are not anticipated by the Bechtel reference. Applicant respectfully requests that the Examiner to withdraw the rejection of Claims 6-17 and to pass Claims 6-17 to allowance.

Response to Rejection of Claims 1-17 Under 35 U.S.C. § 102(f)

In the August 19, 2005 Final Office Action, the Examiner rejects Claims 1-17 under 35 U.S.C. § 102(f), stating that Applicant, Dr. Bogdan C. Maglich, did not invent the claimed subject matter and citing various references. Applicant submits that none of the assumptions made or the references raised by the Examiner supports a rejection of Claims 1-17 for anticipation under 35 U.S.C. § 102(f).

Under 35 U.S.C. § 102(f), a person shall be entitled to a patent unless “he did not himself invent the subject matter sought to be patented.” Therefore, in order to reject a claim under § 102(f), the Examiner must show that Applicant did not invent the claimed subject matter of the claim. As explained in M.P.E.P. § 2137.01(II) (Rev. 2, May 2004), inventorship is defined by the person or persons who conceived of the invention. Insofar as defining an inventor is concerned, reduction to practice, *per se*, is irrelevant. Furthermore, as long as the inventor maintains intellectual domination over making the invention, the inventor may consider and adopt ideas, suggestions, and materials from others (M.P.E.P. §§ 2137.01(III), 2138.04).

Pursuant to M.P.E.P. § 2137.01(I), “[t]he party or parties executing an oath or declaration under 37 C.F.R. § 1.63 are presumed to be the inventors.” Furthermore, statements in a patent application (such as the inventor declaration) as to sole inventorship are *prima facie* evidence of such sole inventorship, so a party relying on his application does not have to prove such facts, and a party who wishes to dispute sole inventorship as stated in an application has the burden of overcoming the *prima facie* effect of the application. See, *Fritsch v. Lin*, 21 U.S.P.Q.2d 1737, 1739 (B.P.A.I. 1991). Therefore, the inventor declaration executed solely by Dr. Maglich and submitted in the present application is *prima facie* evidence of Dr. Maglich’s sole inventorship of the claimed invention of the present application.

As outlined below, Applicant submits that the assumptions made by the Examiner and the references raised by the Examiner do not overcome this *prima facie* evidence of Dr. Maglich’s sole inventorship.

The HIET article

The Examiner cites the article “*HiEnergy Technologies, Inc. (HIET) company interview*,” The Wall Street Transcript, April 4, 2005 (“the HIET article”) as stating that Dr. Maglich

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“clearly admits that he is not the sole inventor of the claimed subject matter.” The Examiner’s assumption appears to place great importance to the HIET article quoting Dr. Maglich as stating that his company in 1997 had “essentially just three scientists” and as stating that “we were able to show to the government what would be a chemist’s dream.” However, as discussed below, Dr. Maglich’s acknowledgment that his company had two other scientists and his use of the pronoun “we” are both irrelevant to the question of inventorship and do not alter the fact that Dr. Maglich is the true, sole inventor of the claimed invention of the present application.

The Examiner’s assumption regarding inventorship is incorrect. As explained in the “Declaration of Bogdan C. Maglich, Ph.D. Pursuant to 37 C.F.R. § 1.132” submitted herewith, the HIET article refers to Applicant’s activities and collaborations to reduce to practice, to show “proof of concept,” and to commercialize **other** inventions (*e.g.*, stoichiometric detection of landmines) besides the claimed invention recited by Claims 1-17 and 26-30 of the above-captioned patent application. Therefore, the HIET article is not an admission regarding Dr. Maglich’s inventorship of the pending claims of the present application.

In addition, as explained in paragraph 15 of Dr. Maglich’s Declaration, it has been Dr. Maglich’s practice to acknowledge the contributions of all individuals who participated in his experiments or other activities, regardless of whether these individuals contributed to the conception of any inventions. Therefore, the mere fact that Dr. Maglich acknowledged in the HIET article that other scientists were involved in the development of a stoichiometric detector of landmines is insufficient to assume that these other individuals contributed to the conception of the claimed invention recited by Claims 1-17 and 26-30 of the present application.

Dr. Maglich’s Declaration also explains that (emphasis added):

14. To the extent that the activities mentioned in the HIET article could be considered to be related to common elements between the claimed invention of the above-captioned patent application and my other inventions, **the contributions by Charles Powell and Albert Beyerle were limited to specific measurements assigned to them by me towards reduction to practice and commercialization activities** with regard to these common elements. In addition, in my position as Chairman of the Board and Chief Scientist of HiEnergy Microdevices, Inc., **these measurements by Charles Powell and Albert Beyerle were conducted under my direction and control.** Besides me, none of the other personnel involved in these activities (including Charles Powell and Albert Beyerle) contributed to the conception of the claimed invention of the above-captioned patent application.

Dr. Maglich’s Declaration further explains that (emphasis added):

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17. To the extent that this collaboration mentioned in the HIET article could be considered to be related to common elements between the claimed invention of the above-captioned patent application and my other inventions, **the role of these other entities in this collaboration was limited to providing funding, equipment, and/or performing specific measurements under my direction and control** with regard to these common elements. Besides me, none of the other personnel involved in these activities contributed to the conception of the claimed invention of the above-captioned patent application.

18. For example, under a "Work for Others" agreement entered into between HiEnergy Microdevices, Inc. and the U.S. Department of Energy in 1997 ..., HiEnergy Microdevices, Inc. paid approximately \$52,000.00 for access to the facilities of the Bechtel Nevada Special Technologies Laboratory (STL) in Santa Barbara, California for **"proof of concept" measurements specified by me** with regard to a particular embodiment of a landmine detection system ... These specific measurements were actually performed by personnel of HiEnergy Microdevices, Inc. ... Because these measurements were performed in a restricted area using the facilities of the STL, the HiEnergy Microdevices personnel were hosted or chaperoned by STL personnel while performing these measurements. This hosting was the full extent of the contribution to the work performed by STL personnel under the WFO agreement. ...

21. As another example, under an agreement entered into between HiEnergy Microdevices, Inc. and the Regents of the University of California as contractor to the U.S. Department of Energy in 1997 ..., HiEnergy Microdevices, Inc. paid \$6,254.00 for **specific measurements identified by me** to be performed by Dr. Michael R. Maier of the E.O. Lawrence Berkeley National Laboratory (LBNL). ... These specific measurements are the full extent of the work performed by Dr. Maier under the DOE agreement. ...

24. In my position as Chief Scientist for HiEnergy Microdevices, Inc. at the time of these two agreements, **these specific measurements performed at STL and at LBNL under these two agreements were conducted under my direction and control**. The HiEnergy Microdevices personnel merely used equipment owned by STL and equipment on loan from E,G&G Ortec to perform the specific measurements while being hosted by STL personnel. Dr. Maier merely used equipment owned by LBNL to perform specific measurements specified by me and provided the results of these measurements to me. Besides me, none of the other personnel involved in the work performed under either the WFO agreement or the DOE agreement (including Dr. Maier and the hosting STL personnel) contributed to the conception of the claimed invention of the above-captioned patent application.

Pursuant to M.P.E.P. §§ 2137.01(II), (III), and 2138.04, even if these measurements specified by Dr. Maglich and performed by others under Dr. Maglich's direction and control are considered to be related to elements of the claimed invention of the present application, they are irrelevant to the question of inventorship. In addition, even assuming for the sake of argument that ideas or suggestions regarding the claimed invention of the present application were received from others,

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these ideas or suggestions were made under the intellectual domination of Dr. Maglich, so they would not alter the fact of Dr. Maglich's sole conception and inventorship of the claimed invention of the present application.

Dr. Maglich's Declaration further states that under both of these agreements, the WFO agreement and the DOE agreement, (i) Dr. Maglich's company was obligated to report to the U.S. Government any Subject Inventions (i.e., inventions conceived of or first reduced to practice under the agreements) in order to retain title to these inventions, and (ii) the STL personnel and Dr. Maier were obligated to report and disclose to HiEnergy Microdevices, Inc. any Subject Inventions made under the respective agreements. Because there were no such inventions conceived of or first reduced to practice by the participants under either of these agreements, no reports of such inventions were made to the U.S. Government. Since the other participants (e.g., STL personnel and Dr. Maier) did not make any reports of such inventions to the U.S. government or to HiEnergy Microdevices, Inc., these participants acknowledge that they did not make any contributions to the conception of an invention. Therefore, any such contributions are irrelevant to the question of inventorship and do not alter the fact of Dr. Maglich's sole conception and inventorship of the claimed invention of the present application.

For at least the above-stated reasons, Applicant submits that the HIET article does not overcome the *prima facie* evidence of Dr. Maglich's sole inventorship of Claims 1-17 of the present application.

The Hurley and Bechtel references

The Examiner also cites "*Current Status of the Associated Particle Imaging System at STL*," J.P. Hurley *et al.*, January 10, 1992 ("the Hurley reference") and the Bechtel reference as clearly showing that at least Mr. Hurley and associates were also working for several years in conjunction with the same organizations. However, as described in Dr. Maglich's Declaration, neither the Hurley reference nor the Bechtel reference disclose the claimed invention as recited by Claims 1-17. For example, neither of these references discloses or suggests having the target position closer to the material being analyzed than to the particle detector array. Furthermore, configurations such as those disclosed by the Hurley or the Bechtel references cannot provide a magnification effect, and both of these references are silent regarding the possibility or desirability of such a magnification effect. Therefore, these references are irrelevant to the inventorship of the claimed invention as recited by Claims 1-17 of the present application.

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In addition, it is pure conjecture by the Examiner to make the leap of logic that Dr. Maglich is not the true, sole inventor of the claimed invention merely because "Mr. Hurley and associates" had worked "in conjunction with the same organizations" as had Dr. Maglich at one time. Such broad statements without additional proof of the contributions of others to the conception of the claimed invention do not overcome the *prima facie* evidence of Dr. Maglich's sole inventorship of Claims 1-17 of the present application.

The Beyerle reference

The Examiner also cites A. Beyerle *et al.*, "*Design of an associated particle imaging system*," Nuclear Instruments and Methods in Physics Research, Volume A299, 1990, pages 458-462 ("the Beyerle reference") as being a disclosure by three other scientists of "what appears to be a seemingly identical system as the instant invention." Applicant submits that the Beyerle reference does not disclose or suggest all the limitations of the pending claims. For example, as stated in Dr. Maglich's Declaration, the Beyerle reference discloses a system having the target position farther from the material being analyzed than from the particle detector. Furthermore, configurations such as those disclosed by the Beyerle reference cannot provide a magnification effect, and the Beyerle reference is silent regarding the possibility or desirability of such a magnification effect. Thus, contrary to the Examiner's assertion that the Beyerle reference reports "a seemingly identical system as the instant invention," the Beyerle reference does not disclose or suggest all the limitations of the claimed invention as recited by Claims 1-17. Therefore, not only is the Beyerle reference not a proper reference for anticipation under 35 U.S.C. § 102(b) (which the Examiner is presumed to have recognized since the Examiner did not make such a rejection), but the Beyerle reference is also not relevant to the question of inventorship of the claimed invention as recited by Claims 1-17.

Other non-patent literature

The Examiner further cites "all of the non-patent literature listed on the attached PTO-892" as disclosing that several other scientists were working "on the project," that nowhere do these documents mentioned Dr. Maglich, and that the present application does not list these other scientists as co-inventors.

As explained in Dr. Maglich's Declaration, all of the associated particle imaging (API) systems purported to be disclosed by the patents and non-patent literature listed on the Form PTO-892 attached to the August 19, 2005 Final Office Action "have the target position **farther**

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from the material being analyzed than from the particle detector.” Furthermore, configurations such as those disclosed by these patents and non-patent literature cannot provide a magnification effect, and these references are silent regarding the possibility or desirability of such a magnification effect. Thus, none of these references, either alone or in combination with one another, discloses or suggests the claimed invention of the present application. Therefore, all of these references are irrelevant to the question of inventorship of the claimed invention as recited by Claims 1-17 of the present application.

Furthermore, pursuant to M.P.E.P. § 2137:

Where there is a published article identifying the authorship ... **the designation of authorship ... does not raise a presumption of inventorship** with respect to the subject matter disclosed in the article ... **so as to justify a rejection under 35 U.S.C. 102(f).**

Thus, even if, for the sake of argument, the non-patent literature cited by the Examiner were relevant to the claimed invention, the authors and coauthors of the non-patent literature listed on the Form PTO-892 may not be presumed to be co-inventors of the claimed invention as recited by Claims 1-17 of the present application. Therefore, the authorship of the non-patent literature cited by the Examiner does not raise a presumption of inventorship of Claims 1-17 of the present application to justify a rejection under 35 U.S.C. § 102(f).

For the foregoing reasons, Applicant respectfully requests that the Examiner withdraw the rejection of Claims 1-17 and pass Claims 1-17 to allowance.

Comments on New Claims 26-30

Applicant has added new Claims 26-30. Support for these claims is found in various portions of the as-filed specification, including but not limited to, page 25, lines 14-21, so these new claims do not add new matter to the present application. Applicant respectfully requests that the Examiner consider the allowability of these new Claims 26-30 and pass these new claims to allowance.

Summary

In view of the foregoing remarks, Applicant respectfully submits that Claims 1-17 and 26-30 are in condition for allowance, and Applicant respectfully requests allowance of Claims 1-17 and 26-30. If there is any further impediment to the prompt allowance of this application, or if the Examiner has any questions at all regarding the present application, the Examiner is

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respectfully invited to call Applicant's representative, Bruce S. Itchkawitz, at 949-721-2924 or at the telephone number listed below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

Dated: 4/18/05

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